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EXAMINER	
PARK, JEONG S	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

HK

Office Action Summary	Application No.	Applicant(s)	
	10/535,006	MATSUI ET AL.	
	Examiner	Art Unit	
	Jeong S. Park	2154	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/6/2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-10,12-19,21-25,28 and 29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-10,12-19,21-25,28 and 29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to communications filed December 6, 2007.

Claim Objections

2. Claims 1-12 are objected to because of the following informalities:

In claim 1, line 24, the phrase "the thus confirmed route control servers" should be corrected as –the confirmed route control servers-- for clear understanding of the claim. Similar correction should be made for claims 5, 10 and 12.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 13-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Nomura et al. (hereinafter Nomura)(U.S. Patent No. 7,035,259 B2).

Regarding claim 13, Nomura teaches as follows:

a plurality of packet transfer apparatuses (LSR1 to LSR5) each of which is provided in each area (within same MPLS network) to store a plurality of user terminals and connected to an optical wavelength path of the photonic network (MPLS network may provide optical path for high speed communication), encapsulates (mapping of IP packets to MPLS network of layer 2 paths), in a lower layer frame (layer 2), an upper layer packet (IP packet, layer 3) received from one of a user network which stores a

transmission source user terminal and an external network which stores the transmission source user terminal and transfers the lower layer frame (IP packet received from IP networks is encapsulated into layer 2 packet at ingress router LSR1 and transferred inside the MPLS network, see, e.g., col. 8, lines 11-20 and figure 4), in transmitting the lower layer frame to the external network, transfers the lower layer frame after decapsulating the lower layer frame to the upper layer packet, and executes mutual conversion and transfer of an upper layer packet on a side of a user terminal corresponding to an upper layer packet address and a lower layer frame on a side of an optical wavelength path corresponding to a lower layer frame address on the basis of an address management table which manages correspondence between the upper layer packet address and the destination lower layer frame address (the egress router LSR5 deletes labels from the labeled IP packets and transfers the packets to adjacent IP networks outside the MPLS network in compliance with a routing table, see, e.g., col. 8, lines 25-28 and figure 4);

an admission control server (user request receiving and processing portion 11 in figure 3 of the policy server) which is provided in each area and sets, of optical wavelength paths of the photonic network, an optical wavelength path to connect packet transfer apparatuses of transmission source and destination in accordance with an optical wavelength path connection request received from the transmission source user terminal through said packet transfer apparatus (the user request receiving and processing portion determines whether or not the user's requests should be permitted, see, e.g., col. 6, lines 44-49);

a frame transfer apparatus (switching labeled IP packets which is layer 2 packets) which is connected to the optical wavelength path of the photonic network to receive the lower layer frame (labeled IP packets) from the transmission source packet transfer apparatus (incoming IP network router which is coming through ingress router LSR1) and transfer the lower layer frame (labeled IP packets) to a packet transfer apparatus corresponding to the upper layer packet (IP address) address of the upper layer packet (IP packets) in the lower layer frame (see, e.g., col. 8, lines 11-28); and

said admission control server (policy server) comprises a route setting function unit (label switch function portion, 22 in figure 3 and details in figure 8) which, in setting the optical wavelength path (using optical path is inherent in ATM network as used in lower layer network), registers correspondence between the upper layer packet address (layer 3 address, IP address) of the user terminal and the lower layer frame address (layer 2 address, VPI and VCI in ATM) corresponding to the optical wavelength path (layer 2 path in ATM) in the address management tables (header or payload information of the IP packet, see, e.g., col. 10, lines 59-65) of the packet transfer apparatuses of the transmission source and destination between the packet transfer apparatuses of the transmission source and destination (MPLS technique teaches for transferring IP packets (layer 3) by a switching process in lower layers (layer 2) such as ATM network, see, e.g., col. 1, lines 16-24)(the policy server PSV sends an instruction to the routers LSRs that the L2 path (applicant's optical wavelength path) should execute mapping of the IP flows, see, e.g., col. 10 ,lines 59-65), an optical wavelength path formed from a cut-through optical wavelength path which has a guaranteed band and passes through

only at least one wavelength switch when a band guarantee request is present (quality assurance parameters, see, e.g., col. 6, liens 50-61), and sets an optical wavelength path which connects the packet transfer apparatuses of the transmission source and destination through said frame transfer apparatus when no band guarantee request is present; (policy server controls the entire routers connected and sets up an optimal route for every IP flow, see, e.g., col. 6, lines 16-61)(user's requests contain transmission quality explicitly required or not, the policy sever determine an appropriate transmission quality based on the label information set, see, e.g., col. 9, lines 4-14).

Regarding claim 14, Nomura teaches as follows:

packet transfer apparatus manages correspondence between a destination upper layer packet address (IP flow) and a destination lower layer frame address (L2 path) in the address management table (IP flow identifying table) converts the upper layer packet from the user terminal side into the lower layer frame, and transfers the lower layer frame to the optical wavelength path of the destination lower layer frame address corresponding to the destination upper layer packet address (mapping of IP flows and L2 path, see, e.g., col. 11, lines , 4-10 and figure 5).

Regarding claim 15, Nomura teaches as follows:

said packet transfer apparatus manages correspondence between transmission source (sender) and destination upper layer packet addresses and a destination lower layer frame address in the address management table, converts the upper layer packet from the user terminal side into the lower layer frame, and transfers the lower layer frame to the optical wavelength path of the destination lower layer frame address

corresponding to the transmission source and destination upper layer packet addresses (mapping of IP flows and L2 path, see, e.g., col. 11, lines , 4-10 and figure 5).

Regarding claims 16, 26 and 28, Nomura teaches as follows:

a packet transfer apparatus characterized in that said apparatus is used in a packet communication network (MPLS network as a label switch network, see, e.g., col. 7, lines 39-41) formed from a network logically built on a photonic network including a transmission link having an optical wavelength path multiplex transmission function and a wavelength switch having an optical wavelength path switching function, the packet communication network comprising an admission control server (policy server) which sets, of optical wavelength paths of the photonic network (set up layer 2 path), one of an optical wavelength path formed from a cut-through optical wavelength path which has a guaranteed band and connects packet transfer apparatuses of transmission source and destination through only at least one wavelength switch and an optical wavelength path which connects the packet transfer apparatuses through a frame transfer apparatus in accordance with an optical wavelength path connection request received from the transmission source user terminal through the packet transfer apparatus, and comprises (see, e.g., abstract);

a forwarding processing unit which manages correspondence between a destination upper layer packet address and a destination lower layer frame address and executes mutual conversion of a destination address of a received packet between an upper layer and a lower layer on the basis of an address management table in which correspondence between an upper layer packet address of a user terminal which is

stored in the packet transfer apparatus and a lower layer frame address corresponding to the optical wavelength path is registered in accordance with setting of the optical wavelength path from the admission control server (mapping of IP flows and L2 paths, see, e.g., col. 11, lines 4-27);

a packet processing unit which encapsulates the upper layer packet received from the user terminal in the lower layer frame and decapsulates the lower layer frame received from the optical wavelength path to the upper layer packet (mapping between IP packets and L2 path, see, e.g., col. 11, lines 4-27);

a transmission frame processing unit which transfers the packet encapsulated (labeled IP packets) by said packet processing unit to the optical wavelength path corresponding to the destination lower layer frame address obtained by said forwarding processing unit and transfers the packet decapsulated by said packet processing unit to the user terminal of the destination upper layer packet address obtained by said forwarding processing unit (ingress router LSR1 encapsulates the incoming IP packets to labeled IP packets as layer 2 packets, intermediate routers LSR2 to LSR4 transfer the labeled IP packets to egress router LSR5, the egress router decapsulates the labeled IP packets into IP packets and transfers to IP network router or terminal, see, e.g., col. 8, lines 11-28);

a route setting function unit (label switch function portion, 22 in figure 3 and details in figure 8) which, in setting the optical wavelength path (using optical path is inherent in ATM network as used in lower layer network), registers correspondence between the upper layer packet address (layer 3 address, IP address) of the user

terminal and the lower layer frame address (layer 2 address, VPI and VCI in ATM) corresponding to the optical wavelength path (layer 2 path in ATM) in the address management tables (header or payload information of the IP packet, see, e.g., col. 10, lines 59-65) of the packet transfer apparatuses of the transmission source and destination between the packet transfer apparatuses of the transmission source and destination (MPLS technique teaches for transferring IP packets (layer 3) by a switching process in lower layers (layer 2) such as ATM network, see, e.g., col. 1, lines 16-24)(the policy server PSV sends an instruction to the routers LSRs that the L2 path (applicant's optical wavelength path) should execute mapping of the IP flows, see, e.g., col. 10 ,lines 59-65); and

an optical wavelength path formed from a cut-through optical wavelength path which has a guaranteed band and passes through only at least one wavelength switch when a band guarantee request is present (quality assurance parameters, see, e.g., col. 6, liens 50-61), and sets an optical wavelength path which connects the packet transfer apparatuses of the transmission source and destination through said frame transfer apparatus when no band guarantee request is present; (policy server controls the entire routers connected and sets up an optimal route for every IP flow, see, e.g., col. 6, lines 16-61)(user's requests contain transmission quality explicitly required or not, the policy sever determine an appropriate transmission quality based on the label information set, see, e.g., col. 9, lines 4-14).

Regarding claim 17, Nomura teaches as follows:

said forwarding processing unit uses, as the address management table (IP flow

identifying table), an address management table in which correspondence between the upper layer packet address (IP address) of a destination user terminal and the lower layer frame address (L2 path identifier) corresponding to the optical wavelength path is registered in accordance with setting of the optical wavelength path from the admission control server, and said transmission frame processing unit transfers the lower layer frame obtained by encapsulating the upper layer packet from the user terminal side to the optical wavelength path of the destination lower layer frame address obtained from the address management table in correspondence with the destination upper layer packet address (see, e.g., col. 8, lines 11-28 and figure 5).

Regarding claim 18, Nomura teaches as follows:

said forwarding processing unit uses, as the address management table, an address management table in which correspondence between the upper layer packet addresses of transmission source and destination user terminals and the lower layer frame address corresponding to the optical wavelength path is registered in accordance with setting of the optical wavelength path from the admission control server, and said transmission frame processing unit transfers the lower layer frame obtained by encapsulating the upper layer packet from the user terminal side to the optical wavelength path of the destination lower layer frame address obtained from the address management table in correspondence (see, e.g., col. 8, lines 11-28 and figure 5).

Regarding claims 19 and 29, Nomura teaches as follows:

an admission control server characterized in that said admission control server is used in a packet communication network formed from a network logically built on a

photonic network including a transmission link having an optical wavelength path multiplex transmission function and a wavelength switch having an optical wavelength path switching function, the packet communication network comprising a packet transfer apparatus which stores a plurality of user terminals, is connected to an optical wavelength path of the photonic network, and executes mutual conversion and transfer of an upper layer packet on a side of a user terminal corresponding to an upper layer packet address and a lower layer frame on a side of an optical wavelength path corresponding to a lower layer frame address on the basis of an address management table which manages correspondence between the upper layer packet address and the destination lower layer frame address, and comprises (see, e.g., abstract);

a route setting function unit (label switch function portion, 22 in figure 3) which sets, of optical wavelength paths of the photonic network (L2 path), an optical wavelength path formed from a cut-through optical wavelength path which has a guaranteed band and directly connects packet transfer apparatuses of transmission source and destination in accordance with an optical wavelength path connection request received from the transmission source user terminal through the packet transfer apparatus (see, e.g., col. 8, lines 11-28 and figure 5);

an external device management function unit (network resource status managing portion, 10 in figure 3, receives information about the status of the nodes and administer status information, see, e.g., col. 6, lines 40-49) which registers correspondence between the upper layer packet address of the user terminal and the lower layer frame address corresponding to the optical wavelength path in the address management

tables of the packet transfer apparatuses of the transmission source and destination in setting the optical wavelength path (see, e.g., col. 8, lines 11-28 and figure 5);

a route setting function unit (label switch function portion, 22 in figure 3 and details in figure 8) which, in setting the optical wavelength path (using optical path is inherent in ATM network as used in lower layer network), registers correspondence between the upper layer packet address (layer 3 address, IP address) of the user terminal and the lower layer frame address (layer 2 address, VPI and VCI in ATM) corresponding to the optical wavelength path (layer 2 path in ATM) in the address management tables (header or payload information of the IP packet, see, e.g., col. 10, lines 59-65) of the packet transfer apparatuses of the transmission source and destination between the packet transfer apparatuses of the transmission source and destination (MPLS technique teaches for transferring IP packets (layer 3) by a switching process in lower layers (layer 2) such as ATM network, see, e.g., col. 1, lines 16-24)(the policy server PSV sends an instruction to the routers LSRs that the L2 path (applicant's optical wavelength path) should execute mapping of the IP flows, see, e.g., col. 10 ,lines 59-65); and

an optical wavelength path formed from a cut-through optical wavelength path which has a guaranteed band and passes through only at least one wavelength switch when a band guarantee request is present (quality assurance parameters, see, e.g., col. 6, liens 50-61), and sets an optical wavelength path which connects the packet transfer apparatuses of the transmission source and destination through said frame transfer apparatus when no band guarantee request is present; (policy server controls the entire

routers connected and sets up an optimal route for every IP flow, see, e.g., col. 6, lines 16-61)(user's requests contain transmission quality explicitly required or not, the policy sever determine an appropriate transmission quality based on the label information set, see, e.g., col. 9, lines 4-14).

Regarding claim 21, Nomura teaches as follows:

an optical wavelength path setting determination function unit (L2 path decision portion, 221 in figure 8) which confirms presence/absence of the band guarantee request (quality assurance parameters from the request) by referring to contract user information of a band guarantee service, which is registered in correspondence with each user terminal in advance, on the basis of the transmission source upper layer packet address of the transmission source user terminal contained in the optical wavelength path connection request (see, e.g., col. 11, lines 4-27).

Regarding claim 22, Nomura teaches as follows:

a destination packet transfer apparatus (egress router LSR5) specifying table which guides, from the destination upper layer packet address, a destination lower layer frame address prefix representing the destination packet transfer apparatus which stores a user terminal having the address, wherein said route setting function unit specifies the transmission source packet transfer apparatus on the basis of the transmission source lower layer frame address prefix contained in the optical wavelength path connection request, specifies the destination packet transfer apparatus on the basis of the destination upper layer packet address contained in the optical wavelength path connection request by looking up said destination packet transfer

apparatus specifying table, and sets the cut-through optical wavelength path between the transmission source packet transfer apparatus and the destination packet transfer apparatus by controlling the transmission source packet transfer apparatus, the destination packet transfer apparatus, and the wavelength switch of the photonic network (see, e.g., col. 11, lines 4-27 and figure 5).

Regarding claim 23, Nomura teaches as follows:

said external device management function unit adds, to the address management table of the packet transfer apparatus, a destination lower layer frame address which corresponds to the destination upper layer packet address and contains a lower layer frame address prefix representing the destination packet transfer apparatus and an identifier representing an optical wavelength path to be used (see, e.g., col. 11, lines 4-27 and figure 5).

Regarding claim 24, Nomura teaches as follows:

said external device management function unit adds, to the address management table of the packet transfer apparatus, a destination lower layer frame address which corresponds to the transmission source and destination upper layer packet addresses and contains a lower layer frame address prefix representing the destination packet transfer apparatus and an identifier representing an optical wavelength path to be used by transmitting a table control packet to the packet transfer apparatus (see, e.g., col. 11, lines 4-27 and figure 5).

Regarding claim 25, Nomura teaches as follows:

an optical wavelength path setting method (label switch function portion, 22 in figure 3 and details in figure 8) characterized by comprising;

the step of causing a plurality of packet transfer apparatuses (LSR1 to LSR5 in figure 4) each of which stores a plurality of user terminals (IP network connection on LSR1) and is connected to an optical wavelength path of a photonic network including a transmission link having an optical wavelength path multiplex transmission function and a wavelength switch having an optical wavelength path switching function to encapsulate, in a lower layer frame, an upper layer packet received from one of a user network which stores a transmission source user terminal and an external network which stores the transmission source user terminal and transfer the lower layer frame, in transmitting the lower layer frame to the external network, transfer the lower layer frame after decapsulating the lower layer frame to the upper layer packet, and execute mutual conversion and transfer of an upper layer packet on a side of a user terminal corresponding to an upper layer packet address and a lower layer frame on a side of an optical wavelength path corresponding to a lower layer frame address on the basis of an address management table which manages correspondence between the upper layer packet address and the destination lower layer frame address (IP packet received from IP networks is encapsulated into layer 2 packet at ingress router LSR1 and transferred inside the MPLS network, see, e.g., col. 8, lines 11-28 and figure 4);

the step of causing a frame transfer apparatus (switching labeled IP packets which is layer 2 packets) which is connected to the optical wavelength path of the photonic network to receive the lower layer frame (labeled IP packets) from the

transmission source packet transfer apparatus and transfer the lower layer frame (labeled IP packets) to a packet transfer apparatus corresponding to the upper layer packet address (IP address) of the upper layer packet in the lower layer frame (IP packets)(see, e.g., col. 8, lines 11-28);

the step of causing an admission control server (user request receiving and processing portion 11 in figure 3 of the policy server) which is connected to the wavelength switch, the packet transfer apparatus, and the frame transfer apparatus to set, of optical wavelength paths of the photonic network, an optical wavelength path to connect packet transfer apparatuses of transmission source and destination in accordance with an optical wavelength path connection request received from the transmission source user terminal through the packet transfer apparatus (the user request receiving and processing portion determines whether or not the user's requests should be permitted, see, e.g., col. 6, lines 44-49); and

the route setting function (label switch function portion, 22 in figure 3 and figure 5) step of, in setting the optical wavelength path, causing the admission control server to register correspondence between the upper layer packet address of the user terminal and the lower layer frame address corresponding to the optical wavelength path in the address management tables (IP flow identifying table, see, e.g., col. 11, lines 4-16) of the packet transfer apparatuses of the transmission source and destination, set, between the packet transfer apparatuses of the transmission source and destination, an optical wavelength path formed from a cut-through optical wavelength path which has a guaranteed band and passes through only at least one wavelength switch when a band

guarantee request is present, and set an optical wavelength path which connects the packet transfer apparatuses of the transmission source and destination through the frame transfer apparatus when no band guarantee request is present (see, e.g., col. 8, lines 11-28 and figure 5).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. (hereinafter Nomura)(U.S. Patent No. 7,035,259 B2), in view of Tinsley et al. (hereinafter Tinsley)(U.S. Publication No. 2002/0131400 A1).

Regarding claim 1, Nomura teaches as follows:

a packet communication network (MPLS network as a label switch network, see, e.g., col. 7, lines 39-41) characterized by comprising a plurality of routers (label switching routers, LSR1 to LSR5 in figure 4, see, e.g., col. 7, lines 42-48) which are connected in a network form through communication links and a plurality of route control servers (policy server PSV, wherein a plurality of policy servers will be provided when one MPLS network is connected to another MPLS network together) each of which is arranged in one of areas provided by dividing the packet communication network and controls the router in the area (the policy server receives status information and transmits set-up instructions to LSR1 through LSR5, see, e.g., col. 7, lines 49-54);

wherein said route control server comprises a destination information acquisition unit (network resource status managing portion 10 and user request receiving and processing portion 11 in figure 3) which acquires destination information of a packet from header information of the packet, the header information being sent from said router in the area (policy server has a function of making IP flows discover the ingress router LSR1 and the egress router LSR5 of the MPLS networking using destination IP addresses and sender's IP address, see, e.g., col. 9, lines 23-32);

a packet control unit which determines an output interface of the packet (the identifiers of the IP flows include IP header information such as destination and sender's IP address, destination and sender's port numbers and classes of protocols, or payload information, see, e.g., col. 10, lines 59-65) in said router on the basis of the destination information (IP header information) and transfer management information (status information from network resource status managing portion 10 in figure 3) and determines the output interface (port number and next router) of the packet on the basis of destination information and transfer management information contained in inter-server information from another route control server (see, e.g., col. 10, lines 37-47); and

said router comprises a header information acquisition unit which acquires the header information from the arrival packet (this is the inherent function of any routers, IP header information, see, e.g., col. 10, lines 59-65) and notifies the route control server of the acquired header information (policy server has a user request receiving and processing portion to determine whether it accepts user's requests or not on the basis of the address information or user's information contained in such request, see, e.g.,

col. 9, lines 61-65), and an output interface control unit which outputs the arrival packet from the output interface corresponding to the packet to a communication link connected to the output interface on the basis of the determination in said route control server (policy server instructs the ingress router LSR1 to transmit the IP flows through the existing path or a new path, see, e.g., col. 10, lines 3-9).

Nomura does not explicitly teach information exchanges between multiple route control servers even though Nomura teaches a single route control server (policy server), which meets all the limitations of the route control server as explained above.

Tinsley teaches as follows:

the distributed gateway routing elements (310 in figure 3, interpreted as route control servers) function as a signal transfer point or signaling gateway (see, e.g., page 3, paragraph [0016], lines 10-11); and

each distributed gateway routing element communicates SS7 signaling messages (signaling message was interpreted as packet header information, signaling messages includes path setup information) with other distributed gateway through virtual IMT bus (314 in figure 3)(see, e.g., page 3, paragraph [0038]).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Nomura to include a method and apparatus of SS7 signaling message exchanges between gateway servers as taught by Tinsley in order to setup a path before sending data packet into the network with out-band signaling path between multiple networks through gateways.

Therefore, Tinsley teaches that transmitting the inter-server information, the inter-

server information transmission/reception unit confirms, based on the transfer management information, route control servers (gateway) which respectively manage areas through which packets having the destination information pass (gateway manages a network and is used for interconnect networks), and transmits the inter-server information (any signaling messages including path setup information) only to the confirmed route control servers.

Regarding claim 2, Nomura teaches as follows:

a plurality of packet transfer apparatuses (LSR1 to LSR5) each of which is provided in each area (within same MPLS network) to store a plurality of user terminals and connected to an optical wavelength path of the photonic network (MPLS network may provide optical path for high speed communication), encapsulates (mapping of IP packets to MPLS network of layer 2 paths), in a lower layer frame (layer 2), an upper layer packet (IP packet, layer 3) received from one of a user network which stores a transmission source user terminal and an external network which stores the transmission source user terminal and transfers the lower layer frame (IP packet received from IP networks is encapsulated into layer 2 packet at ingress router LSR1 and transferred inside the MPLS network, see, e.g., col. 8, lines 11-20 and figure 4), in transmitting the lower layer frame to the external network, transfers the lower layer frame after decapsulating the lower layer frame to the upper layer packet, and executes mutual conversion and transfer of an upper layer packet on a side of a user terminal corresponding to an upper layer packet address and a lower layer frame on a side of an optical wavelength path corresponding to a lower layer frame address on the basis of an

address management table which manages correspondence between the upper layer packet address and the destination lower layer frame address (the egress router LSR5 deletes labels from the labeled IP packets and transfers the packets to adjacent IP networks outside the MPLS network in compliance with a routing table, see, e.g., col. 8, lines 25-28 and figure 4);

an admission control server (user request receiving and processing portion 11 in figure 3 of the policy server) which is provided in each area and sets, of optical wavelength paths of the photonic network, an optical wavelength path to connect packet transfer apparatuses of transmission source and destination in accordance with an optical wavelength path connection request received from the transmission source user terminal through said packet transfer apparatus (the user request receiving and processing portion determines whether or not the user's requests should be permitted, see, e.g., col. 6, lines 44-49); and

wherein said router comprises a frame transfer apparatus (switching labeled IP packets which is layer 2 packets) which is connected to the optical wavelength path of the photonic network to receive the lower layer frame (labeled IP packets) from the transmission source packet transfer apparatus (incoming IP network router which is coming through ingress router LSR1) and transfer the lower layer frame (labeled IP packets) to a packet transfer apparatus corresponding to the upper layer packet (IP address) address of the upper layer packet (IP packets) in the lower layer frame (see, e.g., col. 8, lines 11-28), and said admission control server (policy server) comprises a route setting function unit which, in setting the optical wavelength path, registers

correspondence between the upper layer packet address of the user terminal and the lower layer frame address corresponding to the optical wavelength path in the address management tables (path creating portion 15 in figure 3) of the packet transfer apparatuses of the transmission source and destination, sets, between the packet transfer apparatuses of the transmission source and destination, an optical wavelength path formed from a cut-through optical wavelength path which has a guaranteed band and passes through only at least one wavelength switch when a band guarantee request is present, and sets an optical wavelength path which connects the packet transfer apparatuses of the transmission source and destination through said frame transfer apparatus when no band guarantee request is present (policy server controls the entire routers connected and sets up an optimal route for every IP flow, see, e.g., col. 6, lines 16-61).

Regarding claim 3, Nomura teaches as follows:

packet transfer apparatus manages correspondence between a destination upper layer packet address (IP flow) and a destination lower layer frame address (L2 path) in the address management table (IP flow identifying table) converts the upper layer packet from the user terminal side into the lower layer frame, and transfers the lower layer frame to the optical wavelength path of the destination lower layer frame address corresponding to the destination upper layer packet address (mapping of IP flows and L2 path, see, e.g., col. 11, lines , 4-10 and figure 5).

Regarding claim 4, Nomura teaches as follows:

said packet transfer apparatus manages correspondence between transmission

source (sender) and destination upper layer packet addresses and a destination lower layer frame address in the address management table, converts the upper layer packet from the user terminal side into the lower layer frame, and transfers the lower layer frame to the optical wavelength path of the destination lower layer frame address corresponding to the transmission source and destination upper layer packet addresses (mapping of IP flows and L2 path, see, e.g., col. 11, lines , 4-10 and figure 5).

Regarding claims 5, 7-9 and 12, Nomura teaches as follows:

a route control server (policy server) which is arranged in one of areas provided by dividing a packet communication network including a plurality of routers (label switching routers, LSR1 to LSR5 in figure 4, see, e.g., col. 7, lines 42-48), characterized by comprising (the policy server receives status information and transmits set-up instructions to LSR1 through LSR5, see, e.g., col. 7, lines 49-54);

a destination information acquisition unit (network resource status managing portion 10 and user request receiving and processing portion 11 in figure 3) which acquires destination information of a packet from header information of the packet, the header information being sent from the router in the area (policy server has a function of making IP flows discover the ingress router LSR1 and the egress router LSR5 of the MPLS networking using destination IP addresses and sender's IP address, see, e.g., col. 9, lines 23-32); and

a packet control unit which determines an output interface of the packet in the router on the basis of the destination information and transfer management information (status information from network resource status managing portion 10 in figure 3),

wherein said packet control unit determines the output interface (port number and next router) of the packet on the basis of destination information and transfer management information contained in inter-server information from another route control server (see, e.g., col. 10, lines 37-47).

Nomura does not explicitly teach information exchanges between multiple route control servers even though Nomura teaches a single route control server (policy server), which meets all the limitations of the route control server as explained above.

Tinsley teaches as follows:

the distributed gateway routing elements (310 in figure 3, interpreted as route control servers) function as a signal transfer point or signaling gateway (see, e.g., page 3, paragraph [0016], lines 10-11); and

each distributed gateway routing element communicates SS7 signaling messages (signaling message was interpreted as packet header information, signaling messages includes path setup information) with other distributed gateway through virtual IMT bus (314 in figure 3)(see, e.g., page 3, paragraph [0038]).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Nomura to include a method and apparatus of SS7 signaling message exchanges between gateway servers as taught by Tinsley in order to setup a path before sending data packet into the network with out-band signaling path between multiple networks through gateways.

Therefore, Tinsley teaches that transmitting the inter-server information, the inter-server information transmission/reception unit confirms, based on the transfer

management information, route control servers (gateway) which respectively manage areas through which packets having the destination information pass (gateway manages a network and is used for interconnect networks), and transmits the inter-server information (any signaling messages including path setup information) only to the confirmed route control servers.

Regarding claim 10, Nomura teaches as follows:

a route control method characterized by comprising;

the header information acquisition step of causing a plurality of routers which are connected in a network form through communication links to form a packet communication network to acquire header information from an arrival packet and send the header information to, of a plurality of route control servers each of which is arranged in one of areas provided by dividing the packet communication network and controls the router in the area, a route control server corresponding to the area of the router (this is the inherent function of any routers, IP header information, see, e.g., col. 10, lines 59-65);

the destination information acquisition step of causing the route control server to acquire destination information of the packet from the header information of the packet, the header information being sent from the router in the area (policy server has a function of making IP flows discover the ingress router LSR1 and the egress router LSR5 of the MPLS networking using destination IP addresses and sender's IP address, see, e.g., col. 9, lines 23-32);

the packet control step of causing the route control server to determine an output

interface of the packet (port number and next router) in the router on the basis of the destination information and transfer management information and determine the output interface of the packet on the basis of destination information and transfer management information contained in inter-server information from another route control server (see, e.g., col. 10, lines 37-47); and

the output interface control step of causing the router to output the arrival packet from the output interface corresponding to the packet to a communication link connected to the output interface on the basis of the determination in the route control server (see, e.g., col. 10, lines 37-47).

Nomura does not explicitly teach information exchanges between multiple route control servers even though Nomura teaches a single route control server (policy server), which meets all the limitations of the route control server as explained above.

Tinsley teaches as follows:

the distributed gateway routing elements (310 in figure 3, interpreted as route control servers) function as a signal transfer point or signaling gateway (see, e.g., page 3, paragraph [0016], lines 10-11); and

each distributed gateway routing element communicates SS7 signaling messages (signaling message was interpreted as packet header information, signaling messages includes path setup information) with other distributed gateway through virtual IMT bus (314 in figure 3)(see, e.g., page 3, paragraph [0038]).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Nomura to include a method and apparatus of SS7 signaling

message exchanges between gateway servers as taught by Tinsley in order to setup a path before sending data packet into the network with out-band signaling path between multiple networks through gateways.

Therefore, Tinsley teaches that transmitting the inter-server information, the inter-server information transmission/reception unit confirms, based on the transfer management information, route control servers (gateway) which respectively manage areas through which packets having the destination information pass (gateway manages a network and is used for interconnect networks), and transmits the inter-server information (any signaling messages including path setup information) only to the confirmed route control servers.

Response to Arguments

7. Applicant's arguments filed 12/6/2007 have been fully considered but they are not persuasive.

A. Summary of Applicant's Arguments

In the remarks, the applicant argues as followings:

1) Regarding amended claims 13, 16, 19, 25, 28 and 29. Nomura does not teach, disclose or suggest: the limitations in Applicant's claims 13, 16, 19, 25, 28 and 29 having an arrangement of the admission control server comprises a route setting function unit which, in setting the optical wavelength path, registers correspondence between the upper layer packet address of the user terminal and the lower layer frame address corresponding to the optical wavelength path in the address management tables of the packet transfer apparatuses of the transmission source and destination,

sets, between the packet transfer apparatuses of the transmission source and destination, an optical wavelength path formed from a cut-through optical wavelength path which has a guaranteed band and passes through only at least one wavelength switch when a band guarantee request is present, and sets an optical wavelength path which connects the packet transfer apparatuses of the transmission source and destination through said frame transfer apparatus when no band guarantee request is present; and

2) Regarding amended claims 1, Applicant's claimed invention the inter-server information transmission/reception unit (13) of the route control server (1) is arranged that "in transmitting the inter-server information, the inter-server information transmission/reception unit confirms, based on the transfer management information (area information 15), route control servers (1 C, 1 D) which respectively manage areas through which packets having the destination information pass, and transmits the inter-server information only to the thus confirmed route control servers" (see Applicant's specification, page 21, lines 1-14). Not only does Nomura not teach anything about inter-server information transfer, Tinsley, in paragraphs [0016] and [0038], does not teach, disclose or suggest that the distributed gateway routing elements include the limitations of amended claims 1, 5, 10 and 12 of "in transmitting the inter-server information, the inter-server information transmission/reception unit confirms, based on the transfer management information, route control servers which respectively manage areas through which packets having the destination information pass, and transmits the inter-server information only to the thus confirmed route control servers."

B. Response to Arguments:

In response to argument 1), Nomura teaches as follows:

a route setting function unit (label switch function portion, 22 in figure 3 and details in figure 8) which, in setting the optical wavelength path (using optical path is inherent in ATM network as used in lower layer network), registers correspondence between the upper layer packet address (layer 3 address, IP address) of the user terminal and the lower layer frame address (layer 2 address, VPI and VCI in ATM) corresponding to the optical wavelength path (layer 2 path in ATM) in the address management tables (header or payload information of the IP packet, see, e.g., col. 10, lines 59-65) of the packet transfer apparatuses of the transmission source and destination between the packet transfer apparatuses of the transmission source and destination (MPLS technique teaches for transferring IP packets (layer 3) by a switching process in lower layers (layer 2) such as ATM network, see, e.g., col. 1, lines 16-24)(the policy server PSV sends an instruction to the routers LSRs that the L2 path (applicant's optical wavelength path) should execute mapping of the IP flows, see, e.g., col. 10 ,lines 59-65); and

an optical wavelength path formed from a cut-through optical wavelength path which has a guaranteed band and passes through only at least one wavelength switch when a band guarantee request is present (quality assurance parameters, see, e.g., col. 6, liens 50-61), and sets an optical wavelength path which connects the packet transfer apparatuses of the transmission source and destination through said frame transfer apparatus when no band guarantee request is present; (policy server controls the entire

routers connected and sets up an optimal route for every IP flow, see, e.g., col. 6, lines 16-61)(user's requests contain transmission quality explicitly required or not, the policy sever determine an appropriate transmission quality based on the label information set, see, e.g., col. 9, lines 4-14).

In response to argument 2), Tinsley teaches as follows:

the distributed gateway routing elements (310 in figure 3, interpreted as route control servers) function as a signal transfer point or signaling gateway (see, e.g., page 3, paragraph [0016], lines 10-11); and

each distributed gateway routing element communicates SS7 signaling messages (signaling message was interpreted as packet header information, signaling messages includes path setup information) with other distributed gateway through virtual IMT bus (314 in figure 3)(see, e.g., page 3, paragraph [0038]).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Nomura to include a method and apparatus of SS7 signaling message exchanges between gateway servers as taught by Tinsley in order to setup a path before sending data packet into the network with out-band signaling path between multiple networks through gateways.

Therefore Tinsley teaches that transmitting the inter-server information, the inter-server information transmission/reception unit confirms, based on the transfer management information, route control servers (gateway) which respectively manage areas through which packets having the destination information pass (gateway manages a network and is used for interconnect networks), and transmits the inter-

server information (any signaling messages including path setup information) only to the confirmed route control servers.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeong S. Park whose telephone number is 571-270-1597. The examiner can normally be reached on Monday through Friday 7:00 - 3:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NATHAN FLYNN
SUPERVISORY PATENT EXAMINER

JP

February 5, 2008